METHOD AND SYSTEM FOR CALCULATING AN INTRADAY INDICATIVE VALUE OF LEVERAGED BULLISH AND BEARISH EXCHANGE TRADED FUNDS

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of priority under 35 U.S.C. §119(e) of provisional application serial number 60/668,601 filed on April 6, 2005, and provisional application serial number 60/719,985 filed on September 26, 2005, the disclosures of which are incorporated herein in their entireties.

BACKGROUND OF THE INVENTION

[0002] The present invention relates generally to the field of exchange traded funds. In particular, it relates to a method and system for calculating an intraday indicative value for leveraged bullish and/or bearish exchange traded funds (“ETF”).

[0003] Shares of ETFs are traded intraday throughout the exchange trading hours. Investors can buy or sell these shares anytime during the trading hours and achieve the performance of a stock or bond portfolio as a single security. Currently, all of the ETFs listed on the U.S. Exchanges are “Index Funds or Trusts” that track specific market indexes. However, leveraged bullish and bearish ETFs (individually “Bullish ETFs” or “Bearish ETFs” and together “Bullish and Bearish ETFs”) have only been proposed recently.

SUMMARY

[0003a] According to a first aspect, there is provided a nontransitory computer-readable medium, having instructions recorded thereon which, when executed on a computing system, cause the computing system to perform a method for calculating an intraday indicative value of an exchange traded fund (“ETF”) including at least one equity security and at least one derivative product, the method comprising: determining, by the computing

system, an intraday change in value of the at least one derivative product included in the ETF; retrieving, by the computing system, an accumulated value of the at least one derivative product, wherein the accumulated value includes a gain or loss of the at least one derivative product during a previous trading day and represents a cumulative value of gains and losses carried forward over a period of time during which the derivative product is open; and determining, by the computing system, the intraday indicative value of the ETF based on: the accumulated value of the at least one derivative product; and the intraday change in value of the at least one derivative product, wherein the intraday indicative value represents a gain or loss of the at least one derivative product since a closing of the previous trading day, wherein the intraday change in value and the accumulated value are included in designated fields within an intraday indicative value (IIV) file, wherein the IIV file further includes at least one value from an existing portfolio composition file (PCF) having a standardized format, the portfolio composition file excluding data associated with at least one derivative product.

[0003b] According to a second aspect, there is provided a nontransitory computer-readable medium, having instructions recorded thereon which, when executed on a computing system, cause the computing system to perform a method for calculating an intraday indicative value of an exchange traded fund (“ETF”) including at least one fixed-income security and at least one derivative product, the method comprising: determining, by the computing system, an intraday change in value of the at least one derivative product included in the ETF; retrieving, by the computing system, an accumulated value of the at least one derivative product, wherein the accumulated value includes a gain or loss of the at least one derivative product during a previous trading day and represents a cumulative value of gains and losses carried forward over a period of time during which the derivative product is open; and determining, by the computing system, the intraday indicative value of the ETF based on: the accumulated value of the at least one derivative product; and the intraday change in value of the at least one derivative product, wherein the intraday indicative value represents a gain or loss of the at least one derivative product since a closing of the previous trading day, wherein the intraday change in value and the accumulated value are included in designated fields within an intraday indicative value (IIV) file, wherein the IIV file further includes at least one value from an existing portfolio composition file (PCF) having a standardized format, the portfolio composition file excluding data associated with at least one derivative product.

[0003c] According to a third aspect, there is provided a system for calculating an intraday indicative value (IIV) of an exchange traded fund ("ETF"), the system comprising: a communication device configured to receive an intraday indicative value (IIV) file, the IIV file comprising: at least one value from an existing portfolio composition file (PCF) having a standardized format, the portfolio composition file excluding data associated with at least one derivative product; an intraday change in value of at least one derivative product; a daily accumulated change in value of the at least one derivative product, wherein the daily accumulated change includes a gain or loss of the at least one derivative product during a previous trading day and represents a cumulative value of gains and losses carried forward over a period of time during which the derivative product is open; and cash equivalent amounts; wherein the intraday change in value and the daily accumulated change in value are included in designated fields within the IIV file; and a computing device configured to: calculate an intraday ETF value by summing: the intraday change in value of the at least one derivative product; the daily accumulated change in value of the at least one derivative product; and the cash equivalent amounts; and divide the intraday ETF value by a total number of shares outstanding to obtain a current intraday per share value of the ETF, wherein the intraday indicative value represents a gain or loss of the at least one derivative product since a closing of the previous trading day.

[0003d] According to a fourth aspect, there is provided a computer system, comprising: a computing processor configured to: process data for share creation and redemption and near-real time share valuation for an Exchange Traded Fund (“ETF”) that invests in at least one derivative product and at least one equity security; and create an intraday indicative value (“IIV”) file for the ETF based on the data processed, the IIV file comprising: at least one value from an existing portfolio composition file (PCF) having a standardized format, the portfolio composition file excluding data associated with at least one derivative product; an accumulated change in value of the at least one derivative product in which the ETF invests, wherein the accumulated value includes a gain or loss of the at least one derivative product during a previous trading day and represents a cumulative value of gains and losses carried forward over a period of time during which the derivative product is open; wherein the accumulated change in value is included in designated fields within the IIV file; a publication processor configured to: publish the IIV file to an authorized participant such that the authorized participant can utilize the IIV file to calculate an intraday indicative value

of the ETF; and an order processor configured to receive a request to create or redeem a block of shares in the ETF, wherein the intraday indicative value represents a gain or loss of the at least one derivative product since a closing of the previous trading day.

[0003e] According to a fifth aspect, there is provided a computer system, comprising: a computing processor configured to: process data for share creation and redemption and near-real time share valuation for an Exchange Traded Fund ("ETF") that invests in at least one derivative product and at least one fixed-income security; and create an intraday indicative value ("IIV") file for the ETF based on the data processed, the IIV file comprising: at least one value from an existing portfolio composition file (PCF) having a standardized format, the portfolio composition file excluding data associated with at least one derivative product; an accumulated change in value of the at least one derivative product in which the ETF invests, wherein the accumulated value includes a gain or loss of the at least one derivative product during a previous trading day and represents a cumulative value of gains and losses carried forward over a period of time during which the derivative product is open; a publication processor configured to: publish the IIV file to an authorized participant such that the authorized participant can utilize the IIV file to calculate an intraday indicative value of the ETF; and an order processor configured to receive a request to create or redeem a block of shares in the ETF, wherein the intraday indicative value represents a gain or loss of the at least one derivative product since a closing of the previous trading day; wherein the accumulated change in value is included in designated fields within the IIV file.

[0003f] According to a sixth aspect, there is provided a nontransitory computer-readable medium, having instructions recorded thereon which, when executed on a computing system, perform a method for calculating an intraday indicative value of an exchange traded fund ("ETF"), the method comprising: retrieving an intraday current value for equity securities included in the ETF; calculating an intraday change in value of at least one derivative product included in the ETF; retrieving a daily accumulated change in value of the at least one derivative product, wherein the daily accumulated change includes a gain or loss of the at least one derivative product during a previous trading day and represents a cumulative value of gains and losses carried forward over a period of time during which the derivative product is open; determining the intraday indicative value of the ETF by combining: the intraday current value for the equity securities; the daily accumulated

change in value of the at least one derivative product; and the intraday change in value of the at least one derivative product; comparing the intraday value of the ETF to a current market price of the ETF; and identifying one or more intraday arbitrage opportunities based on the comparison, wherein the equity securities include at least one of a share of a stock, a share of a mutual fund, or a share of another exchange traded fund, wherein the intraday indicative value represents a gain or loss of the at least one derivative product since a closing of the previous trading day, wherein the intraday change in value and the daily accumulated change in value are included in designated fields within an intraday indicative value (IIV) file, wherein the IIV file further includes at least one value from an existing portfolio composition file (PCF) having a standardized format, the portfolio composition file excluding data associated with at least one derivative product.

[0003g] According to a seventh aspect, there is provided a system for calculating an intraday indicative value (IIV) of an exchange traded fund ("ETF"), the system comprising: a communication device configured to receive an intraday indicative value (IIV) file, the IIV file comprising: at least one value from an existing portfolio composition file (PCF) having a standardized format, the portfolio composition file excluding data associated with at least one derivative product; (a) an intraday current value for equity securities included in the ETF; (b) a notional value of at least one derivative product included in the ETF; (c) a daily accumulated change in value of the at least one derivative product, wherein the daily accumulated change includes a gain or loss of the at least one derivative product during a previous trading day and represents a cumulative value of gains and losses carried forward over a period of time during which the derivative product is open; and (d) cash equivalent amounts; and a computing device configured to: (i) calculate an intraday change in value of the at least one derivative product; (ii) determine an intraday indicative value of the ETF by combining: the intraday current value for the equity securities; the daily accumulated change in value of the at least one derivative product; and the intraday change in value of the at least one derivative product; (iii) compare the intraday indicative value of the ETF to a current market price of the ETF on a per share basis; and (iv) identify one or more intraday arbitrage opportunities based on the comparison, wherein the equity securities include at least one of a share of a stock, a share of a mutual fund, or a share of another exchange traded fund, wherein the intraday indicative value represents a gain or loss of the at least one derivative product since a closing of the previous trading day, and wherein the intraday

change in value and the daily accumulated change in value are included in designated fields within the IIV file.

[0003h] According to an eighth aspect, there is provided a nontransitory computer-readable medium, having instructions recorded thereon which, when executed on a computing system, perform a method for calculating an intraday indicative value of an exchange traded fund ("ETF"), the method comprising: retrieving an intraday current value for equity securities included in the ETF; calculating an intraday change in value of at least one derivative product included in the ETF; retrieving a daily accumulated change in value of the at least one derivative product, wherein the daily accumulated change includes a gain or loss of the at least one derivative product during a previous trading day and represents a cumulative value of gains and losses carried forward over a period of time during which the derivative product is open; and determining the intraday indicative value of the ETF by combining: the intraday current value for the equity securities; the daily accumulated change in value of the at least one derivative product; and the intraday change in value of the at least one derivative product, wherein the equity securities include at least one of a share of a stock, a share of a mutual fund, or a share of another exchange traded fund, wherein the intraday indicative value represents a gain or loss of the at least one derivative product since a closing of the previous trading day, wherein the intraday change in value and the daily accumulated change in value are included in designated fields within an intraday indicative value (IIV) file, wherein the IIV file further includes at least one value from an existing portfolio composition file (PCF) having a standardized format, the portfolio composition file excluding data associated with at least one derivative product.

[0003i] According to a ninth aspect, there is provided a system for calculating an intraday indicative value ("IIV") of an exchange traded fund ("ETF"), the system comprising: a communication device configured to: receive an IIV file, the IIV file comprising: at least one value from an existing portfolio composition file (PCF) having a standardized format, the portfolio composition file excluding data associated with at least one derivative product; (a) an intraday current value for equity securities included in the ETF; (b) a notional value of at least one derivative product included in the ETF; (c) a daily accumulated change in value of the at least one derivative product, wherein the daily accumulated change includes a gain or loss of the at least one derivative product during a previous trading day and represents a cumulative value of gains and losses carried forward over a period of time during which the

derivative product is open; and (d) cash equivalent amounts; and a computing device configured to: (i) calculate an intraday change in value of the at least one derivative product; and (ii) determine an intraday indicative value of the ETF by combining: the intraday current value for the equity securities; the daily accumulated change in value of the at least one derivative product; and the intraday change in value of the at least one derivative product, wherein the equity securities include at least one of a share of a stock, a share of a mutual fund, or a share of another exchange traded fund, wherein the intraday indicative value represents a gain or loss of the at least one derivative product since a closing of the previous trading day, and wherein the intraday change in value and the daily accumulated change in value are included in designated fields within the IIV file.

[0003j] According to a tenth aspect, there is provided a computer system for calculating an intraday indicative value ("IIV") of an exchange traded fund ("ETF"), the computer system comprising: a communication processor configured to receive an intraday indicative value ("IIV") file, the IIV file comprising: at least one value from an existing portfolio composition file (PCF) having a standardized format, the portfolio composition file excluding data associated with at least one derivative product; a closing value for equity securities included in the ETF; an accumulated value of at least one derivative product in which the ETF is invested, wherein the accumulated value includes a gain or loss of the at least one derivative product during a previous trading day and represents a cumulative value of gains and losses carried forward over a period of time during which the derivative product is open; and a computing processor configured to determine an intraday indicative value of the ETF based on intraday value information regarding the at least one derivative product, wherein the intraday value information regarding the at least one derivative product comprises the accumulated value of the at least one derivative product and an intraday change in value of the at least one derivative product, and wherein the equity securities include at least one of a share of a stock, a share of a mutual fund, or a share of another exchange traded fund, wherein the intraday indicative value represents a gain or loss of the at least one derivative product since a closing of the previous trading day, and wherein the intraday change in value and the accumulated value are included in designated fields within the IIV file.

[0003k] According to an eleventh aspect, there is provided a nontransitory computer-readable medium, having instructions recorded thereon which, when executed on a

computing system, cause the computing system to perform a method for calculating an intraday indicative value of an exchange traded fund ("ETF"), the method comprising: retrieving, by the computing system, intraday performance information regarding the equity securities included in the ETF; determining, by the computing system, an intraday change in value of at least one derivative product included in the ETF; retrieving, by the computing system, an accumulated value of the at least one derivative product, wherein the accumulated value includes a gain or loss of the at least one derivative product during a previous trading day and represents a cumulative value of gains and losses carried forward over a period of time during which the derivative product is open; and determining, by the computing system, the intraday indicative value of the ETF based on: the intraday performance information regarding the equity securities; the accumulated value of the at least one derivative product; and the intraday change in value of the at least one derivative product, wherein the equity securities include at least one of a share of a stock, a share of a mutual fund, or a share of another exchange traded fund, wherein the intraday indicative value represents a gain or loss of the at least one derivative product since a closing of the previous trading day, wherein the intraday change in value and the accumulated value are included in designated fields within an intraday indicative value (IIV) file, wherein the IIV file further includes at least one value from an existing portfolio composition file (PCF) having a standardized format, the portfolio composition file excluding data associated with at least one derivative product.

[0003l] According to an twelfth aspect, there is provided a computer system, comprising: a computing processor configured to: process data for share creation and redemption and near-real time share valuation for an exchange traded fund ("ETF") that invests in at least one derivative product; and create an intraday indicative value ("IIV") file for the ETF based on the data processed, the IIV file comprising: at least one value from an existing portfolio composition file (PCF) having a standardized format, the portfolio composition file excluding data associated with at least one derivative product; an accumulated change in value of the at least one derivative product in which the ETF invests, wherein the accumulated value includes a gain or loss of the at least one derivative product during a previous trading day and represents a cumulative value of gains and losses carried forward over a period of time during which the derivative product is open; and a publication processor configured to: publish the IIV file to an authorized participant such that the authorized participant can utilize the IIV file to calculate an intraday indicative value of the ETF, wherein the ETF also

invests in at least one equity security, the at least one equity security including at least one of a share of a stock, a share of a mutual fund, or a share of another exchange traded fund, wherein the intraday indicative value represents a gain or loss of the at least one derivative product since a closing of the previous trading day, and wherein the accumulated change in value is included in designated fields within the IIV file.

[0003m] According to an thirteenth aspect, there is provided a nontransitory computer-readable medium, having instructions recorded thereon which, when executed on a computing system, perform a method for calculating an intraday indicative value of an exchange traded fund ("ETF"), the method comprising: calculating, by the computing system, an intraday change in value of at least one derivative product included in the ETF; retrieving, by the computing system, a daily accumulated change in value of the at least one derivative product, wherein the daily accumulated change includes a gain or loss of the at least one derivative product during a previous trading day and represents a cumulative value of gains and losses carried forward over a period of time during which the derivative product is open; calculating, by the computing system, a net asset value of the ETF by summing: the daily accumulated change in value of the at least one derivative product; the intraday change in value of the at least one derivative product; and an estimated cash amount; and dividing, by the computing system, the net asset value of ETF by a total number of shares outstanding to obtain a current intraday indicative value per share for the ETF, wherein the ETF further includes at least one equity security, the at least one equity security including at least one of a share of a stock, a share of a mutual fund, or a share of another exchange traded fund, and the method further comprises: retrieving, by the computing system, an intraday current value for the at least one equity security included in the ETF, wherein calculating the net asset value of the ETF includes summing: the intraday current value for the at least one equity security; the daily accumulated change in value of the at least one derivative product; the intraday change in value of the at least one derivative product; and the estimated cash amount, and wherein the estimated cash amount includes swap costs, wherein the intraday indicative value represents a gain or loss of the at least one derivative product since a closing of the previous trading day, wherein the intraday change in value and the daily accumulated change in value are included in designated fields within an intraday indicative value (IIV) file, wherein the IIV file further includes at least one value from an existing portfolio composition file (PCF) having a

standardized format, the portfolio composition file excluding data associated with at least one derivative product.

[0003n] According to a fourteenth aspect, there is provided a computer system, comprising: a computing server configured to periodically create an intraday indicative value file ("IIV File") for an exchange traded fund ("ETF"), the IIV File comprising: at least one value from an existing portfolio composition file (PCF) having a standardized format, the portfolio composition file excluding data associated with at least one derivative product; a notional value of at least one derivative product in which the ETF invests; an accumulated loss or gain of the at least one derivative product, wherein the accumulated value includes a gain or loss of the at least one derivative product during a previous trading day and represents a cumulative value of gains and losses carried forward over a period of time during which the derivative product is open; and other cash equivalent amounts; and a publication server configured to periodically publish, over a network, the IIV File, such that an authorized participant can use the IIV File to calculate an intraday indicative value of the ETF, wherein the ETF invests in at least one equity security, the at least one equity security including at least one of a share of a stock, a share of a mutual fund, or a share of another exchange traded fund, and wherein the IIV file includes an intraday current value for the at least one equity security, wherein the intraday indicative value represents a gain or loss of the at least one derivative product since a closing of the previous trading day, and wherein the accumulated value is included in designated fields within the IIV file.

[0004] In certain examples the present disclosure relates to a computer implemented method of calculating and using an intraday value of a Bullish ETF for arbitrage purposes, comprising the steps of: calculating, or having calculated, an intraday current value of all the equity securities in the ETF; calculating, or having calculated, mark to market gains or losses of at least one derivative product; retrieving, or having retrieved, an accumulated loss or gain of the at least one derivative product; retrieving other cash equivalent amounts; determining, or having